

CLAIMS

What is claimed is:

1. A consumer electronics device communication and control system, comprising:

5 a data network;

a plurality of data network outlets connected to the data network; and

a gateway device including a network input connector connected to one of the data network outlets, an Internet connector, and a gateway device network/Internet interface module connected to the network input connector and the Internet connector.

10

2. The communication and control system of claim 1, wherein the gateway device further includes:

15 a telephone system interface; and

a gateway device network/telephone interface module connected to the telephone system interface and the network input interface.

3. The communication and control system of claim 1, wherein the gateway device further includes:

20

a power input interface;

an X-10 control module connected to the power input interface
and

a network/X-10 device interface module connected to the X-10
control module and the network input interface.

5

4. The communications and control system of claim 3, further comprising:

a power network;

a plurality of power network outlets connected to the power
network, and wherein

10 the power input interface is connected to one of the power
network outlets.

5. The communication and control system of claim 1, wherein the
gateway device further includes:

15 a wireless interface; and

a network/wireless device interface module connected to the
wireless interface and the network input interface.

6. The communication and control system of claim 1, wherein the gateway
20 device further includes:

a computer system interface; and

a network/computer system interface module connected to the computer system interface and the network input interface.

7. The communication and control system of claim 1, wherein the gateway
5 device further includes an upgradeable user interface module and an upgradeable firewall module.

8. A consumer electronics device communication and control system, comprising:

10 a data network;

a plurality of data network outlets connected to the data network; and

a consumer electronic device including a network input interface connected to one of the data network outlets and a network/electronic device
15 interface module connected to the network input interface.

9. The communication and control system of claim 8, wherein the consumer electronic device further includes a network output interface connected to the network/electronic device interface module.

20

10. The communication and control system of claim 9, wherein the consumer electronic device further includes a network status module connected to the network input interface.

5 11. The communication and control system of claim 8, wherein the consumer electronic device further includes:

a power input interface:

a power output interface; and

a power monitoring and control module connected to the power
10 input interface.

12. The communication and control system of claim 11, wherein the consumer electronic device further includes a power status module connected to the power input interface.

15

13. The communication and control system of claim 8, wherein the consumer electronic device further includes a device capabilities module connected to the network/electronic device interface module.

20 14. The communication and control system of claim 8, wherein the consumer electronic device further includes a data source connected to the network/electronic device interface module.

15. The communication and control system of claim 8, wherein the consumer electronic device further includes an audio output device connected to the network/electronic device interface module.

5

16. The communication and control system of claim 8, wherein the network/electronic device interface module includes a MaGIC network/electronic device interface module.

10 17. A consumer electronics device communication and control system, comprising:

a data network;

a plurality of data network outlets connected to the data network; and

15 a legacy bridge device including a network input interface connected to one of the data network outlets, a legacy device interface, and a network/bridge device interface module connected to the network input interface and the legacy device interface.

20 18. The communication and control system of claim 17, wherein the legacy device interface includes an infrared legacy device interface and the

network/bridge device interface module includes a network/infrared bridge device interface module.

19. The communication and control system of claim 18, further including an
5 infrared legacy device database module connected to the infrared network/infrared bridge device interface module.

20. The communication and control system of claim 18, wherein the legacy device interface includes a legacy speaker interface.

10

21. The communication and control system of claim 20, wherein the legacy speaker interface includes a speaker amplifier module.

22. The communication and control system of claim 17, wherein the legacy
15 device interface includes a legacy receiver interface and the network/bridge device interface module includes a network/legacy receiver interface module.

23. The communication and control system of claim 17, wherein the legacy device interface includes a legacy DVD player interface and the network/bridge
20 device interface module includes a network/legacy DVD player interface module.

24. The communication and control system of claim 17, wherein the legacy device interface includes a legacy plasma screen interface and the network/bridge device interface module includes a network/legacy plasma screen interface module.

5

25. The communication and control system of claim 17, wherein the legacy device interface includes a legacy wireless interface and the network/bridge device interface module includes a network/wireless device interface module.

10 26. The communication and control system of claim 17, wherein the bridge device further includes a device capabilities module connected to the network/bridge device interface module.

15 27. The communication and control system of claim 17, wherein the network/bridge device interface module includes a real time data transport protocol module.

28. The communication and control system of claim 17, wherein the network/bridge device interface module includes a real time, bi-directional,
20 fixed length, data transport protocol module.

29. A consumer electronics device communication and control system,
comprising:

a data network;

a plurality of data network outlets connected to the data
5 network backbone;

a wireless network access device including a network input
interface connected to one of the data network outlets, a wireless interface,
and a network/wireless device interface module connected to the network
input interface and the wireless interface; and

10 a wireless consumer electronics device remote control.

30. The communication and control system of claim 29, wherein the wireless
network access device further includes a device capabilities module connected
to the network/wireless device interface module.

15

31. The communication and control system of claim 29, wherein the
wireless network access device further includes a network output interface
connected to the network/wireless device interface module.

20 32. The communication and control system of claim 29, wherein the
network/wireless device interface module includes a fixed network sample
rate data transport protocol module.

33. A gateway network device, comprising:

a data network access port adapted to be connected to a data network;

5 an Internet access port adapted to be connected to an Internet;

a real time, digital data communications module connected to the data network access port and the Internet access port, the communications module adapted to transmit digital data received from the Internet to the data network in real time and to transmit digital data
10 received from the data network to the Internet in real time.

34. The network device of claim 33, wherein the communications module transmits and receives digital data using a fixed network sample rate.

15 35. The network device of claim 33, wherein the digital data communications module is adapted to transmit and receive digital data using a MaGIC digital data communications protocol.

36. The network device of claim 33, further comprising:

20 a telephone system access port connected to the digital data communications module and adapted to be connected to a telephone system;
and

wherein

the digital data communications module is adapted to receive analog telephone signals from the telephone system, to convert the received analog telephone signals into digital received telephone signals, and
5 to transmit the digital received telephone signals to the data network; and

the digital data communications module is adapted to receive digital network telephone signals from the data network, to convert the digital network telephone signals into analog network telephone signals, and to transmit the analog network telephone signals to the telephone
10 system.

37. The network device of claim 33, further comprising:

a power network access port adapted to be connected to a power network;

15 an X-10 control system connected to the power network access port and the digital data communications module; and

wherein

the digital data communications module is adapted to receive digital X-10 control signals from the data network, to convert the received digital X-10 control signals into a format that is compatible with the
20 X-10 control system, and to transmit the formatted X-10 control signals to the X-10 control system; and

the X-10 control system is adapted to output the formatted X-10 control signals to the power network using the power input connector.

5 38. The network device of claim 33, further comprising:

 a wireless input port connected to the digital data communications module and adapted to be connected to a wireless device; and

 wherein

10 the digital data communications module is adapted to receive wireless signals from the wireless device, to convert the wireless signals into network formatted signals that are compatible with the data network, and to transmit the network formatted signals to the data network; and

15 the digital data communications module is adapted to receive network formatted signals from the data network, to convert the network formatted signals into a wireless formatted signals that are compatible with the wireless device, and to transmit the wireless formatted signals to the wireless device.

20

39. The network device of claim 33, further comprising:

a computer input port connected to the digital data communications module and adapted to be connected to a computer system; and

wherein

5 the digital data communications module is adapted to receive computer signals from the computer system, to convert the computer signals into network formatted signals that are compatible with the data network, and to transmit the network formatted signals to the data network; and

10 the digital data communications module is adapted to receive network formatted signals from the data network, to convert the network formatted signals into computer formatted signals that are compatible with the computer system, and to transmit the computer formatted signals to the computer system.

15

40. A consumer electronics device, comprising:

a device input adapted to be connected to a data network;

a synchronous, digital data communication interface connected to the device input, the communication interface adapted to communicate

20 digital data to and from the data network using the device input; and

a data source connected to the digital data communication interface, the data source adapted to generate and transmit digital data to the digital data communication interface.

5 41. The electronics device of claim 40, wherein the data source is adapted to generate digital audio and control data and the digital data communication interface is adapted to communicate the digital audio and control data to the data network.

10 42. The electronics device of claim 40, wherein the data source is adapted to generate digital audio, video, and control data and the digital data communication interface is adapted to communicate the digital audio, video, and control data to the data network.

15 43. The electronics device of claim 40, further comprising a network status indicator connected to the device input and adapted to provide an indication of network connection status.

44. The electronics device of claim 40, further comprising a device
20 capabilities module connected to the digital data communication interface, the capabilities module adapted to transmit capabilities information associated with the electronics device to the digital data communication interface, and

wherein the digital data communication interface is adapted to broadcast the capabilities information to the data network.

45. A consumer electronics device, comprising:

- 5 a device input adapted to be connected to a data network;
 a real time, synchronous, digital data communications module
connected to the device input, the communications module adapted to receive
digital data from the data network in real time; and
 an audio output device connected to the communications module
10 and adapted to output audio based on the digital data.

46. The electronics device of claim 45, further comprising a power input adapted to be connected to a power system and a power output adapted to be connected to a second consumer electronics device.

15

47. The electronics device of claim 46, further comprising a power control system connected to the power input and adapted to monitor and control power flow into the electronics device.

20 48. The electronics device of claim 46, further comprising a device output adapted to be output digital data to the second consumer electronics device.

49. A wireless network access device, comprising:

a network input adapted to pass network data to and from a data network;

a wireless input/output port adapted to be wirelessly connected
5 to a wireless device, the wireless input/output port adapted to pass wireless data to and from the wireless device; and

a real time, synchronous, bi-directional, digital data communications module connected to the network input, the communications module adapted to receive network data from the data network, to convert
10 the network data into wireless data that is compatible with the wireless device, and to transmit the wireless data to the wireless device using the wireless input/output port, the communications module further adapted to receive wireless data from the wireless device, to convert the received wireless data into wireless network data, and to transmit the wireless
15 network data to the data network.

50. A legacy bridge device, comprising:

a network input connector adapted to be connected to a data network;

20 a legacy device interface adapted to be connected to a legacy device;

a real time, synchronous, bi-directional, digital data communications module connected to the network input connector and the legacy device interface, the communications module adapted to receive digital network signals from the data network, to transform the digital network signals into legacy signals that are compatible with the legacy device, and to output the legacy signals to the legacy device using the legacy device interface, the communications module further adapted to receive legacy signals from the legacy device, to transform the legacy signals into digital network signals that are compatible with the data network, and to output the digital network signals to the data network.

51. The bridge device of claim 50, wherein the legacy device interface includes conventional receiver connectors adapted to be connected to a conventional receiver.

15

52. The bridge device of claim 50, wherein:

the legacy device interface is adapted to be connected to a legacy device outputting legacy digital data formatted according to a legacy digital data communication protocol; and

20

the digital data communications module is adapted to transform the legacy digital data into a network format that is compatible with a network digital data communication protocol.

53. The bridge device of claim 52, wherein the network digital data communication protocol is a MaGIC digital data communication protocol.

54. A legacy bridge device, comprising:

5 a network input connector adapted to be connected to a data network;

 a legacy device interface adapted to be connected to a legacy device;

 a real time, synchronous, bi-directional, digital data
10 communications module connected to the network input connector and the legacy device interface, the communications module adapted to receive digital network signals from the data network, to transform the digital network signals into legacy signals that are compatible with the legacy device, and to
15 output the legacy signals to the legacy device using the legacy device interface.

55. The bridge device of claim 54, wherein the legacy device is a speaker.

56. The bridge device of claim 54, wherein the legacy device interface is an
20 infrared legacy device input/output port adapted to transmit and receive infrared legacy signals.

57. The bridge device of claim 56, further comprising a legacy device database module connected to the communications module and adapted to stored legacy device information.

5 58. A legacy bridge device, comprising:

a network input connector adapted to be connected to a data network;

a legacy device interface adapted to be connected to a legacy device;

10 a real time, synchronous, bi-directional, digital data communications module connected to the network input connector and the legacy device interface, the communications module adapted to receive legacy signals from the legacy device, to transform the legacy signals into digital network signals that are compatible with the data network, and to output the
15 digital network signals to the data network.

59. The bridge device of claim 58, wherein the legacy device is a CD player.

60. The bridge device of claim 58, wherein the legacy device is a DVD
20 player.

61. The bridge device of claim 58, wherein:

the legacy device interface is adapted to be connected to a legacy device outputting legacy digital data formatted according to a legacy digital data communication protocol; and

the digital data communications module is adapted to transform
5 the legacy digital data into a network format that is compatible with a network digital data communication protocol.

62. The bridge device of claim 61, wherein the legacy digital data communication protocol is an AES/EBU digital data communication protocol.

10

63. The bridge device of claim 61, wherein the legacy digital data communication protocol is an S/PDIF digital data communication protocol.

64. The bridge device of claim 61, wherein the legacy digital data
15 communication protocol is a Light Pipe digital data communication protocol.

65. The bridge device of claim 61, wherein the legacy digital data communication protocol is a Firewire digital data communication protocol.

20 66. A system for communications and control of consumer electronic devices in a home comprising:

a. a plurality of network outlets installed in one or more walls of

the home, at least some of the plurality of network outlets having a network-in and a network-out interface, each of the network outlets operatively interconnected to each of the other network outlets to define a network;

b. a plurality of the consumer electronic devices, each of the
5 devices including a device interface module for communication of digital data and control data from at least one of the devices to at least one other of the devices;

c. each of the device interface modules in each of the plurality of consumer electronic devices connected to one of the network outlets;

10 d. a gateway/router device operatively connected to the network;

e. a wireless network access point connected to the network; and

f. at least one remote control device operatively connected to the wireless access point, the remote control device adapted to send control signals to at least one of the consumer electronic devices.

15